REMARKS

Claims 53-96 were pending and variously stand rejected or objected to. Claims 57-66, 68, 69, 71, 74-90, 93 and 94 have been canceled. Claims 53, 56, 67, 70, 72, 73, 91, 92, 95 and 96 have been amended and claims 54 and 55 have been substantially rewritten. New claims 97-102 have been added.

Claims 53-56, 67, 70, 72, 73, 91, 92, 95 and 96 remain pending.

6.   Claims 53 and 91 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) are said to contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The following limitations are said to not be supported in the specification: "a content analysis of a selected page based on the number of uses", "an anchor text content score" and "a page weighting factor".

Claim 53 has been amended and now calls for

- "examining content related to the selected word on the selected page to determine a content score and adjusting the content score in accordance with the page weight of the selected page", support for which may be found for example on page 9, third paragraph.
- " examining text associated with the outbound hypertext link on the linking page related to the selected word to determine an anchor weight for the linking page", support for which may be found for example on page 16, second to fourth paragraph.
- a " examining a probability of visitors viewing a particular page to determine a page weighting factor", support for which may be found for example on page 9, third paragraph.

Claim 91 has been amended and now calls for

- " a content score for use of each one of a plurality of selected words on said each page", support for which may be found for example on page 9, third paragraph;
- " an anchor weight related to the use of said each of the plurality of selected words in association with an outbound link ", support for which may be found for example on page 16, second to fourth paragraph; and
- "a page weight related to a probability of a user viewing said each page as a result of viewing pages in a random fashion in the collection", support for which may be found for example on page 9, third paragraph and page 13, fourth paragraph.

8.   Claims 53 and 91 are said to lack proper antecedent bases for "the relevancy of page", "the relevancy of the words", "the relevancy of pages", "a collection of pages" and "hypertext linking page".

Claim 53 has been amended and
- does not call for the term "relevancy".
- calls for "crawling the World Wide Web to produce a collection of pages" as previously presented and currently amended.
- does not call for the term "hypertext linking page".

Claim 91 has been amended and
- calls for " ranking a relevancy of said selected page".
- calls for "crawling the World Wide Web to produce a collection of pages" as previously presented and currently amended.
- calls for " linking hypertext pages".

9.   Claims 53 and 91 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite because "the pages" , "that pages" and "that linking page".

Claims 53 and 91 have been amended to avoid the use the term "that".

10.   Claims 53 and 91 stand objected to because of informalities related to "linking pages" and "the anchor text score".   Claims 53 and 91 have been amended as noted above and call "linking hypertext pages" and for "an anchor weight".

13.   Claim 53 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Aridor in view Broder.   Claim 53 has been amended.

Aridor is said to teaches a computer-implemented method of ranking the relevancy of pages in a collection of pages including linking hypertext pages by teaching ranking a plurality of web pages in a collection of linked pages.

Regarding <u>crawling</u> the Web, Aridor is said to teach crawling the World Wide Web to produce a collection of pages by teaching searching a corpus of document to produce and identify a set of reference documents. However, Aridor does not teach crawling the Web but rather, as shown in Fig. 2, using an agent manager 44 to apply a search request to search engines 32 for use by knowledge agent 40 to build and update a topic or domain specific knowledge base 42. In particular, as noted in [0078], Aridor specifically teaches that Manager 44 receives queries from user 22 and applies the queries as searches to several general purpose search engines, such as AltaVista and Google. Aridor teaches crawling the search result sets provided by the search engines in response to the query to update the topic specific knowledge base.

Applicants respectfully traverse the Examiner's statement because crawling search result pages from the Web does not teach, as present claimed in claim 53 as amended, crawling the World Wide Web to produce a collection of pages without limitation to topic. Aridor teaches applying a search query to the Web and crawling the results. In Aridor, this requires *a priori* knowledge of the keywords (or related words) in the search query before the collection of pages can be acquired. As a result, there must be a substantial delay after the query has been received before the collection of pages can be made. Crawling the Web to produce a collection of pages without limitation to topic does not require *a priori* knowledge of the keywords of a query before the collection of pages is produced as claimed.

Regarding ranking pages to produce a <u>searchable database</u>, Aridor is said to teach "ranking the relevancy of words on the pages to produce a database indexed by words, the database searchable to produce ranked search results in response to a search query" by teaching "applying a ranking algorithm on a collection of web pages to produce ranked result of a set of web pages or documents, based on the particular query and to the domain of interest".   That is, as disclosed in [0118], [0119] and Fig. 6, Aridor teaches that the sites saved in the knowledge base are ranked as a result of prior searches which have proven relevant to prior queries and are therefore "assumed to be central to the domain in question".   Knowledge agent 40 assigns a history score to each site which are then compared to the relevance scores 74 for a specific query to determine which sites are to be inserted or removed from the knowledge base.

Applicants respectfully traverse the Examiner's statement above, because Aridor does not teach, as claimed in claim 53 as amended, "creating a database of the collection of pages indexed by the plurality of selected words, each indexed selected word in the database index associated with pages ranked for said each indexed selected word so that ranked search results are produced in response to a subsequent query which includes one or more of the selected words".

Regarding determining an <u>intrinsic</u> ranking factor, Applicants note with appreciation that Aridor is said to not teach determining an intrinsic ranking factor for a selected page by a content analysis of the selected page based on the number of uses of at least one selected word on the selected page.   However, Aridor teaches - as shown in Fig. 4 and [0099] to [0108] - a method for computing text scores by generating a profile for each page, including all words listed on the page and their frequencies of use.   The words in each page profile are divided into three groups: strong (e.g. words in the title or large font), medium (e.g. highlighted in bold or italics, etc. or in small font headers) and regular.

Aridor does not teach determining an intrinsic ranking factor for use of a selected word on a selected page by examining content related to the selected word on the selected page to determine a content score and adjusting the content score in accordance with the page weight of the selected page, as claimed in claim 53 as amended.

Regarding combining intrinsic and extrinsic ranking factors, Aridor is said to teach "ranking the relevancy of the selected page for the at least one selected word by combining the intrinsic and extrinsic ranking factors related thereto" by teaching "ranking the document from a collection of web pages or document and showing the relevancy and the relationship of the content of page or documents". In particular, in section [0024], Aridor teaches ranking pages retrieved from general search engines in response to a refined query, as well as other pages via links. This expanded set of pages is ranked by textual affinity to the particular query and the domain of interest and topological information apparently related to linked pages. In section [0033], documents relevant to the query are ranked by comparing them to the set of reference documents and/or links between them. In section [0052], Aridor teaches ranking the found documents with respect to their relevance to the domain in response to textual and topological scores.

However, as shown in Fig. 6, Aridor teaches computing query score (90), computing domain score (92) and combining the query and domain scores to find the text score (68). Further, in Fig. 3, Aridor teaches combine text scores 68 and hub/authority scores 72 to create combined scores 74. As a result, Aridor teaches combining scores related to a query and the domain with scores related to inbound and outbound links to create ranked list 76. As disclosed in [0098], Aridor teaches that knowledge agent 40 ranks the found pages for relevance to the user based on both textual and topological aspects, using information stored in knowledge base 42 to provide a final list of sites 76, ranked in order of their combined scores, for download by the user.

Aridor does not teach ranking a selected page for a selected word by combining intrinsic and extrinsic factors before creating a database indexed by the selected words as claimed in claim 53 as amended. That is, Aridor does not teach combining an intrinsic ranking factor not requiring query (or domain of interest) related information, with an extrinsic ranking factor also not requiring query related information before creating a database indexed by selected words so that ranked search results are produced in response to a subsequent query which includes one or more of the selected words.

Aridor is said to teach searching the web pages in a collection or list of web pages, ranking the web pages and producing ranked search results based on the query.

Aridor does not teach crawling the web to produce a collection of pages without limitation to topic and determining and combining intrinsic and extrinsic factors for selected words on each page before creating a database indexed by the plurality of selected words, each indexed selected word in associated with pages ranked for said each indexed selected word so that ranked search results are produced in response to a subsequent query which includes one or more of the selected words.

Broder is said to teach "ranking factor and determining the relevance from the content of a document and determining the relationship between the documents" at col. 2, lines 52-65, col. 4, lines 36-42, col. 5, lines 12-20 and col. 7, lines 30-35.   At col. 2, lines 52-65, Broder teaches that pages can be ranked on two or more page qualities. At col. 4, lines 36-42, Broder teaches that certain matrices capture the relationship between pages to determine a quality of a page in relationship to the topic searched and to other pages. At col. 5, lines 12-20, Broder teaches that the matrices may indicate some quality of or relationship between pages. At col. 7, lines 30-35, Broder teaches that the linear combination of the matrices allows pages to be ranked on two or more page qualities sought by the user.

The Examiner has held that it would have been obvious to combine the teachings of Aridor and Broder and that Broder provides motivation for combining the ranking factors for a selected page to determine the relevance of the page content as well as the relationship of the document with other documents to retrieve relevant search results.

Aridor and Border teach techniques for providing more relevant search results from Web searches. However, Aridor's technique requires *a priori* knowledge of queries. In particular, Aridor teaches collecting search results from prior keyword queries of the user from general purpose search engines to form a domain specific subset of the Web, called a knowledge base. Aridor does not teach crawling the Web to produce a collection of pages without limitation topic. Broder may be said to provide motivation for combining ranking factors.

However, the combination of Aridor and Broder does not render obvious the method as claimed in amended claim 53 including:

- crawling the World Wide Web to produce a collection of pages without limitation to topic;

- determining and combining intrinsic and extrinsic ranking factors each adjusted by page weight; and then

- creating a database indexed by the selected words, each indexed selected word associated with pages ranked for the indexed selected word so that ranked search results are produced in response to a subsequent query which includes one or more of the selected words.

14.   Claims 54-59, 74-75, 80-81 stand rejected as obvious over Aridor in view of Broder and further in view of Page. Claims 54 and 55 have been substantially rewritten, claims 57-72 and 74, 75, 80 and 81 have been canceled.

With respect to claim 56, Aridor in view of Broder is said to disclose a method of ranking the relevancy of pages in a collection of pages including linking hypertext pages as discussed in claim 53. Aridor and Broder are said to not teach the use of a weighting factor related to the linking page.

Page is said to teach a weighting factor for linking pages. At col. 3, lines 55-67, Page teaches that a linked database can be represented as nodes, as shown in Fig. 1, having forward and backward links to other nodes. At col. 4, lines 12-38, Page teaches that backlinks from different pages may be weighted differently and the number of links may be normalized. At col. 7, lines 2-22, and lines 28-36 Page teaches that links may be weighted to avoid artificial inflation, e.g. by ignoring local links and the links may be weighted differently in accordance with emphasis given by the manner of use on the page.

The Examiner stated that it would have been obvious to combine Aridor, Broder with the teachings of Page to incorporate the use of a weighting factor. Nothing in the combination of Aridor, Broder or Page, however, renders obvious determining an extrinsic weighting factor for a selected page by examining text, associated with an outbound hypertext link to the selected page on a linking page, related to the selected word to determine an anchor weight and adjusting the anchor weight related to a quantity on outbound links on the linking page as claimed in claim 56 as amended.

15.   Claims 60-73, 76-79, 82-90 and 91-96 stand rejected under 35 U.S.C. 103(a) as being unpatentable over in view Broder and Page and further in view of Edlund.   Claims 60-72, 76-79, 82-90, 93 and 94 have been canceled. Claims 73, 91, 92, 95 and 96 have been amended. Claim 73 as amended is dependent on claims 54 – 56 which are dependent on independent claim 53. Claims 92, 95 and 96 are dependent on claim independent 91.

With respect to claim 73, Aridor, Broder and Page are said to not teach determining a size of a paragraph in which the at least one selected word is used in the linking page. The Examiner has held that it would have been obvious to modify Aridor, Broder, Page with Edlund. Edlund does not, however, teach the use of the size of a paragraph for any purpose.

Applicants respectfully traverse this rejection because nothing in the combination of Aridor, Broader, Page or Edlund renders obvious determining an extrinsic ranking factor by determining a size of a paragraph in which the selected word is used in the linking page as claimed in claim 73 as amended.

With respect to independent claim 91, Aridor is said to teach, for each page of a collection of pages including hypertext linking pages, a content score for the use of each one of a plurality of selected words on said each page by teaching "scoring for each document or page".   At section 0066, Aridor teaches that a definition of a specific topic or domain, and an identified related set of documents, is provided that can be searched by a query so that scores can be assigned.

Aridor therefore <u>clearly</u> teaches against crawling the web to produce a collection of pages without limitation to topic, determining the selected words for which the pages are to be scored and/or scoring the pages for the selected words, before the query is known.

Aridor is said to teach an anchor text content score for each plurality of selected words, related to the use of one or more of the plurality of selected words in associated by teaching "anchor text associated on page with the link to the query term or selected words". Aridor therefore also clearly teaches against determining an anchor weight related to words selected on each page before the query is known.

Aridor is also said to teach, for each of the plurality of selected words, ranking a relevancy of each page in accordance with the content score for that page by "ranking for each page associated on

score". At section [0096], Aridor teaches that the anchor text is scored based on the similarity of the anchor text to the query terms and therefore teaches against determining an anchor weight before the query is known. At section [0101], Aridor teaches creating a domain profile during or preferably in advance of the searching as a base against which agent 40, after the query, scores the frequency of the terms in the page profiles. At section [0113], Aridor teaches assigning hub and authority scores. As shown in Fig. 3, hub and authority scores 70 are assigned in parallel with the text scores 68. As shown in Fig. 4, text scores are created after knowledge of the query, see steps 82, 86 and 90 so that the hub and authority scores are apparently assigned after knowledge of the query.

Aridor is also said to teach building a searchable database indexed in accordance with the selected words for producing a ranked search results in response to a search query by teaching "building or obtain the search result based on the query". At section [0015], Aridor teaches automatic query expansion for improving search results. At sections [0020]-[0021]. Aridor teaches the use of knowledge agents with domain specialization which receive the user's query and carry out the search by simulating the steps involved in the conventional interactive search process. Aridor specifically notes that the time required for the search is substantial because Aridor recommends that the user can thus disconnect while the agent is searching and obtain the search results at a later time or by email. Aridor teaches that the knowledge agent automatically maintains a knowledge base including a set of leading sites in its domain and a repository of terms that appear in these sites and that after each search, the knowledge agent evaluates the search results and, as appropriate, adds to the knowledge base new pages that were found in the search to be highly relevant, possibly taking the place of old pages with lower utility.

Aridor clearly teaches against the use of a non-domain specific collection of pages produced and maintained by crawling to Web before the query is known. Aridor does not teach ranking the pages for words that appear on the pages, but rather teaches scoring the pages in response to a query. Even though the knowledge base may be persistent, it is updated by each new search query and/or expanded search query. Aridor doses not teach building a non-topic knowledge base by crawling the web before the query is known, scoring the pages for page weight, content and anchor weight before the query is known and indexing the knowledge base by words selected from each page unrelated to

topic together with pages ranked for each world so that a search of the knowledge base for a query quickly returns an already ranked set pages for keywords corresponding to the selected words.

Aridor is said to teach searching the web pages from a collection or list of web page and ranking the web pages and producing ranked search results based on the query. Aridor is said to not teach ranking factor for each linking page in the collection of pages.

However, Broder is said to teach ranking factor and determining the relevance from the content of a document and determining the relationship between the documents. The combination of Aridor and Broder is said to not teach weighting factor related to the linking page. Page is said to teach weighting factor for linking pages. The combination of Aridor, Broder and Page are said to not teach outbound link, selected page/word.

Edlund is said to teach "range or limit of a word on the page". At col. 2, lines 10-26, Edlund teaches that there are Internet search engines which provide ranked search results giving special weighting to words based on usage of the word.

The Examiner has held, with regard to claim 91, that it would have been obvious to combine the teachings of Aridor in view of Broder and Page with the teachings of Edlund by incorporating the use of outbound link to the page on each linking page to improve ranking.

Applicants respectfully traverse this rejection. A combination of Aridor, Broder, Page and Edlund would result in a method for building a knowledge base, as a topic specific subset of the Web, based on with knowledge of a series of prior and/or current queries which could then be searched to produce a result set of pages which could thereafter be ranked.

Nothing in this combination renders obvious a method of ranking pages by crawling the Web without limitation to topic to produce a collection, determining selected words from a page in the collection unrelated to topic to determine, without *a priori* knowledge of key words, content and anchor scores, ranking pages for each word by combining the content score adjusted for its page weight with the anchor scores for linking pages each adjusted by their page weight to build a searchable data base indexed by the words so that a ranked set of search results is produced by searching the database in response to the subsequent query for selected words corresponding to the query keywords, as claimed in claim 91 as amended.

With respect to claim 92, Aridor is said to teach a method of ranking the relevancy of pages in collections of .pages as discussed in claim 91. Aridor is said to teach searching the web pages from a collection or list of web page and ranking the web pages and producing ranked search results based on the query. Aridor is said to not teach ranking factor for each linking page in the collection of pages. Broder is said to teach ranking factor and determining the relevance from the content of a document and determining the relationship between the documents. Page is said to teach weighting factor for linking pages. In combination, Aridor, Broder and Page are said to not teach outbound link, selected page/ word. However, Edlund is said to teach range or limit of a word on the page.

It is said that it would have been obvious to combine the teachings of Aridor, Broder and Page with the teachings of Edlund to incorporate the use of outbound link to the page on each linking page.

Applicants respectfully traverse this rejection for the reasons stated above with regard to claim 91. Nothing in the combination of these references renders obvious a method of ranking pages by crawling the Web without limitation to topic to produce a collection, determining selected words from a page in the collection unrelated to topic to determine, without *a priori* knowledge of key words, content and anchor scores, ranking pages for each word by combining the content score adjusted for its page weight with the anchor scores for linking pages each adjusted by their page weight and the number of outbound lines to build a searchable data base indexed by the words so that a ranked set of search results is produced by searching the database in response to the subsequent query for selected words corresponding to the query keywords, as claimed in claim 92 as amended.

With respect to claim 95, Aridor is said to teach adjusting the ranking in accordance with a proximity between the at least two of the plurality of words by teaching "ranking in proximity: sections 0033 and 0088". At [0033], Aridor teaches ranking the found documents by evaluating textual resemblance. At [0088], Aridor teaches expanding root set 54 by crawling to backward sites 56 and forward sites 58. At [0080], however, Aridor teaches ranking by using a list of closely related terms that are frequently found in proximity to the search terms, that is are topically related.

Nothing in Aridor renders obvious adjusting the ranking in accordance with a proximity between two of the plurality of selected words, selected from the page unrelated to topic as claimed in claim 95 which is dependent on claim 91, both as amended.

With respect to claim 96, Aridor is said to teach adjusting the ranking in accordance with a word order between the at least two of the plurality of words by teaching "ranking based on the order of scores of the words: section 0098". At [0098], Aridor teaches that the search results are ranked in order of their combines scores, not on a word order between to of the selected words.

With regard now to the rewritten and new claims, as noted above, claims 54 and 55 have been completely rewritten and new claims 97-102 have been added.

With regard to claim 54, which is dependent on independent claim 53, nothing in a combination of Aridor, Broder, Page or Edlund renders obvious indexing the collection of pages to select the plurality of selected words from the pages in the collection of pages. As noted above, Aridor teaches that the knowledge base of documents be collected from query based searches of the Web which requires knowledge of keywords in queries. As claimed in claim 54 as amended, the selected words are selected from the words on the pages rather than in response to queries.

With regard to claim 55, nothing in a combination of Aridor, Broder, Page or Edlund renders obvious re-crawling the Web without limitation to topic to update the collection. Aridor teaches updating the knowledge base in response to subsequent query based search results.

With regard to new independent claim 97, nothing in a combination of Aridor, Broder, Page or Edlund renders obvious crawling the Web to produce a collection of pages without limitation to topic, selecting words from the pages of the collection of pages without *a priori* knowledge of keywords in a query, ranking the pages in the collection of pages for the selected words and creating a database of the pages in the collection of pages indexed in accordance with the selected words, each indexed word associated with pages ranked for the word so that search results provided in

response to the query are already ranked in accordance with relevance to the query for the selected words as claimed in claim 97.

With regard to claim 98, which is dependent on independent claim 97, nothing in a combination of Aridor, Broder, Page or Edlund renders obvious selecting words from the pages of the collection of pages without *a priori* knowledge of keywords in a query, determining a ranking factor for each page for each selected word based on use of said each selected word on said each page and adjusting the ranking factor for each page for a page weight associated with said each page as claimed.

With regard to claim 99, which is dependent on independent claim 97, nothing in a combination of Aridor, Broder, Page or Edlund renders obvious selecting words from the pages of the collection of pages without *a priori* knowledge of keywords in a query, determining an anchor weight for each linking page in the collection of pages having an outbound link to said each page, the anchor weight based on use of said selected word is association with said outbound link and adjusting the ranking factor for each page for a page weight associated with said each page as claimed.

With regard to claim 100, which is dependent on independent claim 97, nothing in a combination of Aridor, Broder, Page or Edlund renders obvious selecting words from the pages of the collection of pages without *a priori* knowledge of keywords in a query, adjusting the anchor weight for each such linking page in accordance with a link weight based on other outbound links on such linking page as claimed.

With regard to new independent claim 101, nothing in a combination of Aridor, Broder, Page or Edlund renders obvious (a) determining a set of words used on a selected page to be ranked in a collection of pages, (b) ranking the selected page for each word in the set of words for use on the selected page and adjusting the ranking for a page weight associated with the page being ranked, (c) ranking remaining pages in the collection of pages for use of said each word in association with an

outbound link to the selected page and adjusting the ranking for a page weight associated with the page being ranked, (d) repeating (a) through (c) for all pages in the collection of pages and (e) forming an index entry for each word in all the sets of words, each index entry including a list of the pages in the collection of pages using the word being indexed having the highest combined rankings for 1) use of the word being indexed on the page being listed and   2) use of the word being indexed in association with pages having an outbound link to the page being listed as claimed..

With regard to claim 102, which is dependent on independent claim 101, nothing in a combination of Aridor, Broder, Page or Edlund renders obvious (a) determining a set of words used on a selected page to be ranked in a collection of pages, (b) ranking the selected page for each word in the set of words for use on the selected page, (c) ranking remaining pages in the collection of pages for use of said each word in association with an outbound link to the selected page, (e) forming an index entry for each word in all the sets of words, each index entry including a list of the pages in the collection of pages using the word being indexed having the highest combined rankings and further adjusting the ranking for a link weight associated with other outbound links on the page being ranked as claimed.

Applicants respectfully request that the rejections be reconsidered in light of the amendments and arguments presented herein and the case be passed to issue.

Respectfully submitted,

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